

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (Previously Amended) A combinatorial library of different sequence peptide members ~~synthesized on~~ bound to solid phase, where each constituent library member consists of ~~comprises~~:  
——— (a) a peptide sequence of three or more amino acid residues bound to solid phase characterized by (i) a sequence of two or more amino acid residues forming a metal ion-binding domain and including at least one amino acid residue containing at least one S sulfur atom wherein the said S sulfur atom is protected by an orthogonal ~~S-protecting~~ sulfur atom-protecting group, the orthogonal ~~S-protecting~~ sulfur atom-protecting group being compatible with peptide solid phase synthesis and removable without cleaving the peptide from the solid phase, (ii) a sequence of one or more amino acid residues either at the ~~N- or C-terminus~~ amino terminus or carboxy terminus of the metal ion-binding domain, or at both the ~~N- or C-terminus~~ amino terminus or carboxy terminus of the metal ion-binding domain, ~~provided that the at least one amino acid residue containing at least one S-protected by an orthogonal S-protecting group is not the terminal amino acid at either the N- or C-terminus, and (iii) a cleavable bond attaching the peptide sequence to solid phase; and wherein the library comprises a different~~ — (b) a ~~unique~~ selection or sequence of amino acid residues in the peptide sequence of at least ~~one~~ two of the constituent members of the library;  
——— wherein the orthogonal ~~S-protecting~~ group may be removed without cleaving the peptide sequence from the solid phase.


Claims 2-3 (Withdrawn)

Claim 4 (Currently Amended) The combinatorial library of claim 1, ~~2 or 3~~ wherein the metal ion-binding domain further comprises at least one N nitrogen atom available for binding to a metal ion ~~upon removal of the orthogonal S-protecting group~~.

Claim 5 (Currently Amended) The combinatorial library of claim 1, ~~2 or 3~~ wherein the metal ion-binding domain comprises three residues forming an  $N_3S_1$  ligand.

Claim 6 (Currently Amended) The combinatorial library of claim 1, ~~2 or 3~~ wherein the orthogonal ~~S-protecting sulfur atom-protecting~~ group is S-thio-butyl, acetamidomethyl, 4-methoxytrityl, S-sulfonate or 3-nitro-2-pyridinesulfonyl.

Claim 7 (Currently Amended) The combinatorial library of claim 1, ~~2 or 3~~ wherein the orthogonal ~~S-protecting sulfur atom-protecting~~ group is selected such that it may be removed from constituent library members thereof without otherwise altering the constituent library members or any amino acid side chain protecting group therein.




Claim 8 (Currently Amended) The combinatorial library of claim 1, ~~2 or 3~~ wherein the ~~structural diversity~~ different selection or sequence of amino acid residues occurs in the metal ion-binding domain.

Claim 9 (Currently Amended) The combinatorial library of claim 1, ~~2 or 3~~ wherein the ~~structural diversity~~ different selection or sequence of amino acid residues occurs outside the metal ion-binding domain.

Claim 10 (Currently Amended) The combinatorial library of claim 1, ~~2 or 3~~ wherein one or more constituent library members include at least one amino acid residue or mimic of an amino acid residue in the sequence at the N- or C-terminus of the metal ion-binding domain containing at least one ~~S~~ sulfur atom wherein the said ~~S~~ sulfur atom is protected by a non-orthogonal ~~S-protecting sulfur atom-protecting~~ group, whereby the orthogonal ~~S-protecting sulfur atom-protecting~~ group may be removed without removing the non-orthogonal ~~S-protecting sulfur atom-protecting~~ group.

Claim 11 (Original) The solid phase combinatorial library of claim 1 wherein the at least one amino acid residue containing at least one ~~S~~ sulfur atom wherein the said ~~S~~ sulfur atom is

protected by an orthogonal ~~S-protecting~~ sulfur atom-protecting group is an L- or D-3-mercapto amino acid,  
~~including but not limited to L- or D-cysteine or L- or D-penicillamine.~~



Claims 12-22 (Withdrawn)

Claim 23 (New) The solid phase combinatorial library of claim 11 wherein the L- or D-3-mercapto amino acid is L- or D-cysteine or L- or D-penicillamine.

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